The social impact of emerging telephone services

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This article considers the complex social issues raised by new technological developments in telecommunications under the general headings of privacy, intrusion, equity, a 'human touch' and freedom of expression. Caller identification is discussed in some detail. The author concludes that, ironically, technological innovations and the regulatory response to them could eventually erode the popularity of the telephone itself.

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Forecasts of the telephone have often been far off the mark. Even in the early 1980s most industry forecasts wildly underestimated the diffusion of facsimile machines, answering machines and cellular telephones. But there is a sense in which the future of telecommunications is becoming less mysterious. The industry will undoubtedly continue to be competitive in the pricing of services. Many in the industry expect competition to extend to local services. The industry is also becoming more convinced that fibre and digital communications will shape new developments. In other respects, however, when we look at the details, timetables and services, the future remains much less consensual. In the realm of social implications it is almost unexplored beyond the work of a few proactive consumer advisory panels and an occasional utopian or dystopian account.[1]

The social impact of the telephone, or any other communication technology, depends on the way it is designed, implemented and used within specific social and organizational settings. The late Ithiel de Sola Pool argued that the telephone had the potential for what he called 'dual effects'. It may have facilitated urban sprawl, but it also made the skyscraper possible.[2] The telephone could be used to protect or invade one's privacy. That does not mean that this technology is neutral, nor that it will in practice have dual effects. On the contrary, it is likely to be designed and implemented in ways that are biased towards serving some interests and values, rather than others. Therefore it is more useful to view communication technologies as malleable than as dual in their effects. The social implications of telecommunications technology can be shaped by people – designers, regulators, politicians, users and others – to reinforce their values and interests.[3] Therefore it is critical for social scientists to ask: What kind of social implications are being shaped by decisions on the design and development of new telecommunication services?

The social impacts of telecommunications are controversial and complex – anything but straightforward. Social implications unfold over decades as teams of experts make decisions about the design, regulation and use of new telephone networks and services. Social issues need to be anticipated and aired before a technology is in place and not left only

[1] There are some exceptions. For example, James E. Katz at BellCore has reviewed research relevant to social issues surrounding caller-ID. See his paper entitled 'Sociological perspectives on caller-ID privacy', Bellcore, Morristown, NJ, February 1990, Draft 1.0. A later version of this paper was published as 'Caller-ID, privacy and social processes', *Telecommunications Policy*, Vol 14, No 5, October 1990, pp 372–412. Another defence is offered by Laurie Thomas and Robert LaRose, *US Telecommunications Privacy Policy and User Responses to Calling Party Identification*, Working Paper, Department of Telecommunication, Michigan State University, East Lansing, MI, 1990. Both,

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to scientists and engineers, who are often driven more by a technical than a social rationality. Because they are seldom anticipated, it should not be surprising that consumers are unaware of the consequences of these choices until problems arise. When they do, as broad a public as possible should be aware of the issues at stake if they are to make informed choices and move the development of telecommunications in socially desirable directions.

What are the social implications being shaped by the design and development of emerging telephone services? The courts, opinion polls, regulatory hearings, press coverage and a few research efforts suggest that five major social issues of telecommunications are likely to gain increasing significance. These issues are familiar because they are already apparent. Before I discuss them it is important to underscore the opportunities that telecommunications provides at the same time. In fact it would be far easier to address the problems posed by new telecommunication services if they did not simultaneously present major opportunities.

Opportunities

The benefits of modern telecommunications networks and services are multifaceted. Economically, the vitality of regional, national and global economies seems intimately connected to the quality of telecommunications networks and services. In many respects cable and telecommunications networks are electronic highways of advanced consumer-oriented societies. Politically, electronic media can provide a mechanism for making incremental but no less important improvements in the quality of political communication among citizens and between the public and government agencies.

Historically the telephone has played a positive role in society. We usually regard our telephone conversations as private. The telephone protected our peace of mind by keeping us connected to those at a distance and buffeting us from unwanted visitors. It has become more universally and equitably accessible and easier to use than many other new electronic media. More households might have televisions than have telephones, but access to these two technologies is qualitatively different. It has often been viewed as a democratic medium because it supports interpersonal communication comparable to face-to-face communication in which users create 'live' content within all the space that First Amendment freedoms provide.

Problems

Few critics of new telecommunication services deny the social and economic role that the telephone has played in society. Instead, many social issues of new developments in telecommunications often extend from threats to the very same values that have long been associated with this technology. Ironically, technological innovations threaten to erode some of the very features that have made the telephone one of the most highly valued electronic communications technologies.

Invasion of privacy: disclosure of personal information

It is appropriate to begin with the issue of privacy since this has been the most pervasive concern arising around new telecommunication services.

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however, are focused almost exclusively on caller-ID.

[2] Ithiel de Sola Pool, ed, *The Social Impact of the Telephone*, MIT Press, Cambridge, MA, 1977, p 1–9.

[3] For a discussion of reinforcement politics, see James N. Danziger, William H. Dutton, Rob Kling and Kenneth L. Kraemer, *Computers and Politics*, Columbia University Press, New York, NY, 1982.

Also, privacy issues will undoubtedly become more prominent in the next few years as consumers and public interest groups more fully appreciate the threats to privacy posed by recent and planned technological developments and services.

It is useful to distinguish privacy concerns from other closely related issues, such as intrusion. An individual's privacy is violated when personal information is gathered, disseminated or used in ways that are not authorized by the individual. A wire tap gathers personal information without the individual's consent. Computer matching often involves using personal information, gathered for one purpose, for another purpose for which the individual did not consent. Personal gossip can violate an individual's privacy by disseminating personal information without the individual's consent. (In the past, families have been blamed more often than other institutions for violating the privacy of individuals.)[4]

Given this definition of privacy, it is not surprising that call identification has received so much attention by the press, courts and consumer advocates.[5] An individual's telephone number will travel with their call, through the telecommunications network, mainly for the purpose of more efficiently using the network, billing for services and providing 911 services.[6] A more efficient telephone network is in the public interest. Facilities that permit companies which handle long-distance and other telecommunication services to obtain billing information would help further competition, another goal now deemed to be in the public interest. Of course, 911 services have proven to be critical. But one unanticipated outcome of introducing this technology is that it has provided the opportunity to offer a new information service – 'call identification'.[7] This service can help a financial services company, a retail store or a home delivery service, such as a pizza parlour, to provide more individualized services since they will be able to use the number as an identifier to access other information about the customer that is maintained in their own databases. It can also be of value to individuals plagued by prank or obscene calls. Nevertheless this technical feature does raise serious concerns.

First, consumers have not given the telephone company or any third party permission to pass their telephone number along with their call. Nor have they given their *implicit* consent to do so by the simple act of using the telephone. The telecommunications industry could argue that it is not the subscriber's telephone number, it belongs to the telephone company. The industry can also claim that public utility commissions have authorized them to transmit the caller's number. However, if they do they are putting the telephone companies out onto a very slippery slope. These claims could be marketing disasters, beg for a regulatory response, and not address how others, such as third parties, other than the telephone company, may use the number and other information about the customer. A good claim can be made for an individual owning their telephone number and other personal information and that they should be notified and maybe even compensated for its use.[8]

Second, will a woman worried about obscene calls want any Tom, Dick or Harry that answers at a department store to have her telephone number? Of course not. Will the witness to a drive-by shooting think twice before calling the police? Yes, indeed. When I discussed this problem with a colleague at another university, he suggested that anyone wishing to remain anonymous could simply slip on their trench coat and sneak into a public telephone booth. As he said, 'We've learned how to do this by watching spy movies.' Remedies such as this illustrate the Orwellian society that we risk creating with new technologies.[9]

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[4] See William Dutton and Robert G. Meadow, 'A tolerance for surveillance', in Karen B. Levitan, ed, *Government Infrastructures*, Greenwood, New York, NY, 1986, pp 147–170.

[5] Caller-ID was, for example, central to a *Los Angeles Times* article entitled 'Telephone technology vs privacy', *Los Angeles Times*, 4 March 1990, p D3. Other coverage includes James E. Katz, 'The electronic assault on privacy', *Christian Science Monitor*, 4 January 1990.

[6] Currently a customer's telephone number usually stops at the central office, unless they make a long-distance telephone call. However, the design of new telecommunications networks and switching systems will pass the telephone number along to the called party in order to enable identification.

[7] Throughout this article I focus my discussion on caller-ID, recognizing that it is representative of a larger set of closely related services that perform some similar functions and that raise many of the same social issues. These include automatic number identification (ANI) and personal communication networks (PCN).

[8] Alan F. Westin was one of the earliest advocates of compensating individuals for the use of their mailing address or other information about them. See Alan F. Westin, 'Consumer privacy protection', *Mobius*, Vol 11, No 1, February 1992.

Telephone services have never been completely private. The telephone operator knew who called them, if not what was said. But it is different now. One difference is that there is less accountability. The telephone company was responsible for maintaining the confidentiality of a call. Now, responsibility will be diffused to any individual or company involved. Should there be a rotten apple it will be difficult, if not impossible, to hold anyone accountable. Another difference is that the technologies and industries are more complex and less comprehensible to the average user. Remedies for privacy violations in the USA are heavily dependent on an individual discovering an offence and seeking redress in the courts. But it is becoming less realistic for individuals to know and understand how their personal privacy might be invaded.

One proposed technological fix, which seems to be the most common legislative remedy, is to allow people to block or suppress the transmission of their telephone number, either for a particular call or for a particular telephone line.[10] If this were a free and universal service it would be better than if blocking were not available, even though there would undoubtedly be social pressure not to block one's telephone number – eg people will refuse your call. (Services are already being developed to automatically reject blocked calls.[11]) However, if we had to pay for blocking the disclosure of personal information it would turn traditional conceptions of telephone services upside down. Instead of privacy being a basic service provided on a universal and equitable basis – a universal expectation – it may become a luxury.

Another proposed 'technological fix' is a new service, like a 900 number, or other prefix, that strips away the calling number. So a call to an AIDS hotline or the police could presumably be anonymous if routed through one of these privacy service providers. Of course, this service would generate information about those who seek privacy. Like paying cash for an airline ticket, you are immediately suspect. Also, only the more sophisticated consumers are likely to use such options for only they understand how their privacy might be invaded or protected.

A social scientist at Bellcore, James Katz, has written one of the more even-handed and comprehensive assessments to date, which on balance supports its provision. His paper presents a number of interesting arguments in support of this technology.[12] Some criticisms of the opponents of caller-ID are quite credible. Many do criticize call identification simply because they are against technology *per se*. But other arguments are less tenable.

One is that the caller never had a 'right' to remain anonymous – anonymity was just an accident of design. A weakness of this argument is that call identification was also an accident of design. The technology was designed for other reasons, as discussed below. In fact, if we turn to the intentions of designers, the motivations behind caller-ID might have been anchored more in the needs of telemarketers than of consumers.

Another argument is that callers can figure out ways to protect their anonymity, such as by calling from a telephone booth. As mentioned, that is Orwellian, but I would add that those called could also use an answering machine or other means to screen calls and protect themselves from intrusion. They do not need caller identification.

[9] James Katz also suggests this as a strategy for maintaining anonymity: Katz, *op cit*, Ref 1.

[10] For example, California has adopted a call-blocking policy, and call blocking was part of the Telephone Privacy Act of 1990 introduced in January 1990 in the US Senate.

[11] Paul Schultz, 'Can we torch Big Brother without burning Galileo?', *Rural Telecommunications*, July/August 1991.

[12] Katz, *op cit*, Ref 1.

One of the more creative arguments in defence of caller-ID is that it is common etiquette for callers to identify themselves when someone answers the telephone.[13] I do not think we should wire Amy Vanderbilt's rules of etiquette into technology. Can we be polite if we have no choice? Also, I wonder if this is a fair point. When we meet someone face to face we do not automatically give them our address – we may not even give them our name. We exercise personal discretion.

Nor is caller-ID analogous to a peephole.[14] The risk of opening your door to a stranger is dramatically different from answering the telephone. Besides, with a peephole we speak to the person, even if through a door. What would Amy Vanderbilt say to a person walking up to the peephole, deciding they did not want to speak with the caller and walking away?

The major claim of the caller-ID advocates is that caller-ID does more good than harm. This is also the thrust of public opinion research that suggests there is more support for than opposition to caller-ID.[15] On the simple utilitarian principle of the greatest good for the greatest number, caller-ID comes out on the plus side because it protects the privacy of the person being called, while it is argued that the problems it raises are relatively trivial.

There are two weaknesses with this utilitarian argument. First, democratic values are as deeply concerned with the protection of minority rights as they are with majority rule. In the USA, for example, if caller-ID is eventually judged to violate an individual's right to privacy, then minority rights will hold sway over majority opinion.[16] There is a good likelihood that there will be a sizeable market for these services in business, if not among the general public.[17] However, even if most people were to want this service, it would not lessen the relevance of privacy concerns, nor an individual's right to privacy.

Second, this utilitarian calculation often confuses two very different kinds of privacy. A Dutch social scientist, Paul Slaa, referred to call identification as a 'double-edged sword' that might protect the privacy of a call recipient, at least in the sense that it can be used to screen unwanted calls, but invade the privacy of the caller, by passing on personal information.[18] Caller-ID threatens the privacy of the caller by disseminating personal information; it protects the peace of mind of the person being called, which is a different dimension of privacy, concerned with intrusion.

Of course, privacy is not only tied to caller-ID and related services such as personal communication networks (PCN). This is simply one of the more contested services. Cordless and cellular telephone services have generated increased concerns over the privacy of telephone conversations.[19] Also, several controversial cases have made the privacy of electronic mail and conferencing systems open to more critical scrutiny.[20]

It is clear that many who use electronic mail systems expect their private messages to be private. But the courts and most organizations have not established clear definitions and norms surrounding access to electronic mail within companies, between organizations and within the public sector. Is electronic mail analogous to a business letter, a memo, a personal letter, a telephone call or a bulletin board notice? Under what conditions might it be analogous to one rather than another? Possibly unique policies should be developed to deal with this as well as other new media.

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[13] *Ibid.*

[14] Several assessments have made this analogy, including Thomas and LaRose, *op cit*, Ref 1.

[15] *Ibid.*

[16] An overview of the constitutionality of caller-ID with respect to privacy is provided by Glenn Chapmas Smith, 'We've got your number (Is it constitutional to give it out?)', *UCLA Law Review*, Vol 37, No 1, October 1989, pp 145–223.

[17] Thomas and LaRose, *op cit*, Ref 1, raise doubts about the market for this service.

[18] Paul Slaa, 'Telecommunications and privacy', paper presented to the Mediaforum, Berlin, 31 August 1989.

[19] Schultz, *op cit*, Ref 11.

[20] THe most publicized case involved the mayor of Colorado Springs, CO, who read electronic mail messages that council members sent to one another. Similar cases have been raised within corporate settings. See Bruce Keppel, 'Electronic mail stirs debate on the privacy issue', *Los Angeles Times*, 23 May 1990; John Markoff, 'Furor erupts from computers in politics', *New York Times*, 4 May 1990.

Intrusion: another dimension of privacy

Closely related to this privacy issue is what might be labelled intrusion. In fact, if privacy is defined in the way Justice Louis Brandeis has, as 'the right to be let alone', then intrusion could well be defined as one aspect of personal privacy.[21] Whether or not you incorporate this notion under the idea of privacy, an intrusive technology is distinctively different from the compulsory disclosure, unauthorized gathering, dissemination or use of personal information.

Even before the first world war people were complaining about the telephone disrupting their lives with 'trivial' matters.[22] In the UK, particularly, it was viewed as an intrusive, impolite, if not rude technology.[23] Only a few realized that what we now call 'telemarketing' would appear by the 1980s. Telemarketing is among the more thriving industries in telecommunications. Telemarketing clients keep expanding the volume of calls they make. Even the Girl Scouts are using telemarketing to sell their cookies![24]

My own experience is such that every time my home telephone rings in the early evening I simply assume that it is a solicitation. Telemarketing has become so intrusive that it is not surprising that a minor consumer revolt has begun to take shape over junk calls.[25] The *Financial Times* reported a survey on telemarketing in the UK. According to this account 40% of 200 office and computer managers surveyed called telemarketing a 'waste of time' and an 'intrusion'. It was a waste in part because it was an intrusion but also because the calls are so 'amateur and obviously scripted' that they are often ineffective.[26]

Of course this concern over junk calls and the intrusiveness of the telephone is related to privacy in the first sense that I spoke of. In some telephone operating companies (not all) everyone who has an 800 number may receive with their bill a listing of those who have called that number. One estimate is that there were 7 billion completed 800 calls in 1988.[27] By using these telephone numbers directly or by using them in conjunction with census and other demographic data, businesses can use profiling techniques to identify their targets for telemarketing campaigns. Call identification will be used in the same way. Soon the very act of calling a business will be an open invitation for evening telephone and mail solicitations.[28]

My students suggested a couple of technological loopholes. A person could use two telephone lines – one for outgoing calls, which would have a publicly accessible number, but which they would not answer. They could keep the other unlisted and only use this for incoming calls. Similarly, some answering machines give a distinctive ring when the caller enters a secret code. Both strategies would filter wanted from probably unwanted calls.

Inequity

Of course, all of these issues are interwoven. Only the more well-to-do can easily afford all of the telephones, lines, identification services and answering machine devices needed to protect themselves from such intrusions. This raises the issue of equity. It may be that a large proportion of families with low incomes spend money on unlisted numbers and other devices to protect their privacy.[29] This is understandable in that public concern over privacy tends to be greatest among lower-income groups. It is the periphery of society, not those in the centre, who feel most threatened.[30] But to discover that privacy

[21] Samuel D. Warren and Louis D. Brandeis, 'The right to privacy', *Harvard Law Review*, Vol 4, 1890, pp 193–220.

[22] A.H. Hastie, 'The telephone tangle and the way to untie it', *Fortnightly Review*, Vol 70, 1898, p 894.

[23] Charles R. Perry, 'The British experience', in Ithiel de Sola Pool, *op cit*, Ref 2, pp 69–96.

[24] Maria L. La Ganga, 'Your number will soon be up in Girl Scout cookie sale', *Los Angeles Times*, 2 March 1990.

[25] Public frustration with junk mail has been blamed for the poor response rate to mailings of the 1990 Census forms. See Michael Schrage, 'Census is regarded as just more junk mail', *Los Angeles Times*, 17 May 1990; Sam Fulwood III, 'Return forms, census chief pleads', *Los Angeles Times*, 13 April 1990.

[26] David Churchill, 'Don't call us . . .', *Financial Times*, 21 September 1989.

[27] Wayne Felps, BellCore lecture, Los Angeles, CA, 23 March 1990.

[28] Mary Lu Carnevale reported that one company 'recently offered to sell lists of tens of thousands of callers to dating and adult-conversation services, horoscope lines, credit cards and sweep-stake offers': Mary Lu Carnevale, 'Bills that permit phone callers to block number ID devices', *Wall Street Journal*, 21 June 1991, p A6.

[29] Katz, *op cit*, Ref 1, Table 1.

[30] Survey research on privacy underscores the degree to which privacy concerns tended to be inversely related to the socioeconomic status of the household. See Dutton and Meadow, *op cit*, Ref 4.

concerns create a market among the poor does not make the disproportionate allocation of their resources any more equitable.

Paying for privacy is only one example of growing disparities among consumers of telecommunication services. But individuals are not the only customers disadvantaged. Small businesses might also be less likely to benefit from many new services. For example, call identification can be more effectively utilized by large organizations. Of course, even the smallest business could make some use of caller-ID simply by writing down the telephone numbers of those who call. Also, personal computer-based systems are making this capability more affordable to smaller companies. But the larger organizations have the resources to design and install the integrated systems needed to most effectively use telephone numbers to automatically call up personal information about customers. Major hotel chains can personalize wake-up calls and other hotel services. Large companies providing financial services have been among the early innovators. A major chain of pizza parlours uses call identification to cut their costs associated with prank calls for pizza deliveries.[31]

Services like the wake-up call and pizza order will give a strategic advantage to the businesses that can marshal the resources to implement them. However, the beneficiaries of such systems will most likely be the larger businesses and chains as opposed to more local, independent, smaller and family businesses. This is not an argument against offering such services. It is just one example of how new services will raise equity issues with the telephone.

Equity is not simply an issue of call identification. There are numerous other new services that raise this issue. For example, equity has been a concern in state and local governments experimenting with electronic access to public records and services over personal computers, modems and telephone lines.[32] Equity is an immediate concern because the diffusion of personal computers is closely tied to socioeconomic status. The adoption of personal computers in the household is limited to about 15–25% of US households, and of these only about 15–20% have modems.[33] These owners tend to have higher incomes than non-owners.[34]

The City of Santa Monica, California, dealt with this issue in launching a new computer system called PEN (the acronym for Public Electronic Network) to permit citizens to access government information via personal computers connected to the telephone network by modems. City officials made a concerted effort to install public terminals with modems in libraries and schools to ensure that residents without personal computers could have access to the system. Nearly 20% of all accesses to the PEN system are made from the public terminals.[35] While the Santa Monica case is reassuring, other cities might view this type of service more as a new source of revenue than as a public utility, as Santa Monica did, and be less committed to public terminals, training and support.

Mediated reality: loss of a 'human touch'

A fourth issue might be called a 'human touch', a phrase used in a full-page advertisement for a bank run in the *New York Times*. Whoever created this ad knows that communication with a real human being can sell a service. Unfortunately the trend is to substitute machines for human beings. This advertisement defined a human touch as being able to get information from a 'friendly, interactive recording'.[36]

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[31] A student of mine called for pizza and was surprised when the telephone was answered by a man giving her a personal greeting: Hello, Sally, would you like your usual? In this case the service raised concerns for my student, since the man knew not only her name but also her address and the key code to her apartment's security gate – all stored on the restaurant's computer system without her prior knowledge.

[32] William H. Dutton, Kendall Guthrie, Jacqueline O'Connell and Joanne Wyer, 'State and local government innovations in electronic services', unpublished report to the Office of Technology Assessment, US Congress, December 1991.

[33] William H. Dutton, Everett M. Rogers and Dahee Rhu, 'The diffusion and impacts of information technology in households', *Oxford Surveys in Information Technology*, Vol 4, 1987, pp 133–193.

[34] Income is the major predictor of adoption and explains much of the relationship between occupation or education with the adoption of a personal computer. See William H. Dutton, Patrick L. Sweet and Everett M. Rogers, 'Socio-economic status and the early diffusion of personal computing in the United States', *Social Science Computer Review*, Vol 7, No 3, Fall 1989, pp 259–271.

[35] William Dutton, Joanne Wyer and Jacqueline O'Connell, 'The impact of government information services', unpublished paper, Annenberg School for Communication, University of Southern California, Los Angeles, CA, May 1992.

Voice mail and related 'voice processing' services have found a growing market. The widespread adoption of answering machines and, more recently, messaging services is certainly symptomatic of this market. The problem is that it seems increasingly difficult to reach a real, live, human being on the telephone.[37] In Los Angeles one of the major playhouses, the tax collector and numerous other users of voice mail provide no opportunity for a caller to reach a human operator. Experiences with this problem are widespread. My own university forced students to deal with a 'friendly interactive recording'. In an advice column in the *Los Angeles Times* P.J. Rourke gave the following tip on the proper use of the answering machine: 'With judicious use of answering machines, a love affair can be conducted without the bother of ever talking to the loved one.'[38]

This problem is created by the poor use of voice processing, such as not offering a human operator option. But it will get worse since such voice processing services are only in the early stages of their diffusion. For example, automated operator services will undoubtedly become more prominent. The introduction of flat-screen display devices that will attach to the telephone will increase the speed and efficiency of voice processing and make these services even more attractive. Voice-activated dialling is being launched.[39] Even if you are lucky enough to get a human on the telephone, call waiting is likely to interrupt and bump you onto a music recording.

The economic payoffs of these services to business and government appear great. They permit the automatic screening and routing of calls and they reduce the time that staff will need to spend on the telephone – perhaps even reducing the need for staff. But I doubt that many users have any good sense of how many customers, clients and citizens are frustrated, if not lost, by their poor use of these systems.

Even if users study printouts of waiting times and abandoned calls, which many receive, it is difficult to validly translate these statistics into customer satisfaction. When I mentioned this frustration to a local government official he argued that the public had real problems with voice processing in his city for 'the first month' but that they 'learned' how to use it. This is a highly questionable assertion. Very few people telephone their local government on a routine basis.

The develoment of computer-mediated communication systems raises the same communication issue. In the case of PEN in Santa Monica, computer-based electronic mail and conferencing has tended to enhance rather than erode communication between citizens and their representatives, despite the mediated nature of this system.[40] City officials have found PEN to complement existing means of communication and therefore improve contact – more communication is better from the standpoint of the council, top management and those who deal directly with citizens.[41] PEN offers opportunities for those interested in local politics to communicate with other like-minded citizens via electronic mail and conferences. Some city staff even feared that PEN would make it so easy for citizens to communicate with city staff and departments that they would be flooded by complaints about noise and potholes and receive more frivolous requests. While staff were not in fact flooded with requests, they did perceive an increase in requests for service.[42]

This computer-mediated communication system offers a more human touch (allowing people to communicate with one another) than many voice mail services which other cities are using for disseminating public information. But Santa Monica's PEN system is an exception. Most state and local governments are experimenting with information kiosks that permit citizens access to information rather than to people. There is a real risk in these cities that the public will become disillusioned if they sense that they cannot reach real, live human beings.

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[36] *New York Times*, 4 October 1989, p A16.

[37] I do not know of evidence that would address this trend, even though some data are available. Telephone companies keep records of completed calls. However, answering machines and voice processing systems should result in telephone company records reflecting a large proportion of 'completed calls' when, in fact, no human being answered.

[38] P.J. O'Rourke, 'Answers: dilemmas resolved', *Los Angeles Times*, 13 February 1990.

[39] Bruce Keppel, 'US Sprint to offer voice-activated telephone dialing', *Los Angeles Times*, 30 January 1990.

[40] William H. Dutton, Joanne Wyer and Jacqueline O'Connell, 'The governmental impacts of information technology: a case study of Santa Monica's Public Electronic Network', unpublished paper, Annenberg School for Communication, Los Angeles, CA, May 1992.

[41] William Dutton and Kendall Guthrie, 'An ecology of games: the political construction of Santa Monica's Public Electronic Network', *Informatization and the Public Sector*, Vol 1, No 4, 1991, pp 279–301; and Dutton, Wyer and O'Connell, *op cit*, Ref 40.

[42] Dutton, Wyer and O'Connell, *ibid*.

Compulsory disclosure: freedom of political expression

One final social issue, freedom of expression, is possibly the most critical. Call identification is quite relevant in this respect to the degree that it requires callers to disclose their identity. In the USA, with its strong First Amendment traditions, the courts have recognized that anonymity is tied to freedom of expression.[43] The compulsory disclosure of authorship could stifle the publication of politically dissenting views. Likewise, compulsory disclosure of the caller's identification might constrain the use of the telephone for political expression.

Freedom of expression is also tied to the increasingly blurred boundaries between telecommunications, broadcasting and information services.[44] The issue is who will and should have control over the content of new services.

The most obvious illustration of this issue is the fuss over dial-a-porn services. There have been numerous calls for the telephone companies to take responsibility for controlling the content of services offered over their networks. So far, First Amendment concerns have over-ridden calls for censorship. However, this promises to be a continuing issue, and related concerns make the issue even more complex.

In France videotext has raised concerns over whether the electronic message service should be controlled. An article in the *Los Angeles Times* raised questions about the propriety of a public telephone company make revenue from such questionable, almost pornographic, electronic messageries. France Télécom is simply a common carrier for hundreds of private information services that the French can access over their Minitel terminals. But because videotext and electronic messaging are such a new medium of communications – neither a broadcasting, telegraph, newspaper or telephone service, but some hybrid of each – it is unclear what kinds of content controls will eventually be imposed in France, and the same is true in the USA.

Santa Monica's PEN does not permit users to be anonymous. They must use their real names just as if they were presenting their views at a council meeting. In this way users of their videotex-like system can be held accountable for obscene or inappropriate uses of the city's public electronic network. For example, it is not supposed to be used for advertising or for political campaigning. Moreover, the city exercises some editorial control over what computer conferences will be held and whether an individual's use of the system violates the guidelines established for the system. The frame of reference is a council meeting or other public meeting in which speakers routinely identify themselves and where elected and appointed officials are responsible for the agenda. However, similar public communication systems, such as local cable TV channels, usually try to distance editorial control from the city government. On any other medium, certainly broadcasting and cable television, we would insist that the editorial function be distanced from direct governmental control.

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[43] For a review of relevant court cases, see Silliam B. Lockhart, Yale Kamisar and Jesse H. Choper, *Constitutional Rights and Liberties: Cases and Materials*, West Publishing Company, St Paul, MN, 1975, pp 444–447. They remind us that even the Federalist Papers were published under fictitious names.

[44] This issue is most fully developed by Ithiel de Sola Pool, *Technologies of Freedom*, Harvard University Press, Cambridge, MA, 1983.

Who will control the content of the new media and new services offered over the telephone network? Put differently, will a common carrier model be applied or will other analogies, from broadcasting, cable TV or print journalism, prevail? If the telephone companies adopt a common carrier model for the new media services and, in the future, for television services over fibre-to-the-home, how will they be able to guard freedom of expression from those who associate the content with the messenger? Voice services are one thing; video is another.

Prospects

The social implications of telecommunications are more complex and conflicting than often imagined. But the image of telecommunications, particularly the telephone, has never been so complex or conflicting. The plain ordinary telephone has been one of the most successful communication technologies in history. One reason is that it has been widely perceived to be one of the most personal, friendly, simple, reliable, universal and private of all the electronic media. That may already be changing. Opinion surveys indicate that the public is drawing a connection between the telephone and invasions of their privacy. This complaint is most often tied to wiretapping and telemarketing.[45] Given previous survey data on privacy, it seems that an increasing proportion of the US public views the telephone as a threat to their privacy.[46]

Certainly, the image of this technology could be quite different in five to ten years. The telephone might be viewed as less personal, more intrusive, less accessible, less reliable[47] and less private. As James Katz, at Bellcore, put it: the designers need to worry as much about the perceptions of the public as about the actual use of information in the network.[48]

Ironically the introduction of new regulations, which push for open networks, and the success of new telephone services such as voice processing are built upon the value consumers place in the telephone. But the short-term success of new regulatory practices and new services might diminish the value of this means of communication in the longer run.

Several related developments, albeit improbable ones, might emerge from these issues. First, there are already major efforts being launched to reregulate telecommunications.[49] If public concerns over privacy, intrusion and access become more prominent, if competition evolves to three or four long-distance competitors, and if the industry cannot regulate itself, then this seems to be a real possibility. Already the courts have been taking on a major role in addressing the privacy concerns surrounding call identification.[50] Likewise, US legislators might become more sympathetic to the European notion of data protection. The idea might gain ground that an independent body or commission might be required to oversee how personal information is collected and used. It may no longer be feasible for individuals to protect their own privacy.

More positively, a market might develop for services that would serve the functions that the plain ordinary telephone used to serve, such as interpersonal communications . . . a truly human touch. High-fidelity audio and personal communications, built around advances in cellular technology, seem to be moves in this direction.

Years ago Michael Noll and Jim Woods at AT&T did a study of the use of AT&T's Picturephone in a hospital setting.[51] One of their findings concerned the motivations for use of this early videophone. The primary reasons that staff used the Picturephone were not tied to the need for a visual image of the other person. Rather, it was simply easier to get an answer – it served as sort of a hotline. It was also easier to dial, requiring only a couple of numbers. In this respect it would be a surprise, given the trends discussed above, but it is feasible that telecommunication services might emerge that provide a means to speak with a real human being, especially if it becomes increasingly difficult to speak to anything but a machine on the ordinary telephone.

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[45] Public pressure has generated congressional efforts to reduce telemarketing activity (William J. Eaton, 'Curbs on telemarketing, "junk fax" ads near passage', *Los Angeles Times*, 27 November 1991, p A13). Evidence of public concern is also apparent from public opinion polls: see James E. Katz, *Public Concern over Privacy*, Bellcore Technical Memorandum TM-ARH-012959, 17 October 1989; and James E. Katz and Annette R. Tassone, 'Public opinion trends: privacy and information technology', *Public Opinion Quarterly*, Vol 54, 1990, pp 125–143.

[46] An early review of surveys on privacy did not suggest such a central concern over the telephone: see Dutton and Meadow, *op cit*, Ref 4. However, more recent survey research suggests growing concerns over the privacy of telecommunications: see Katz and Tassone, *op cit*, Ref 45.

[47] Jonathan Weber, 'Phone outages show hazards of new technology', *Los Angeles Times*, 28 June 1991.

[48] Katz, *op cit*, Ref 45.

[49] The Telephone Privacy Act of 1990 was introduced in the US Senate in January 1990, specifically raising issues of caller-ID: *Los Angeles Times*, 30 January 1990.

[50] As I write, judicial and administrative rulings on the constitutionality of caller-ID remain unsettled. Some decisions appear to support the constitutionality of this service offering: see *Southern Bell Telephone and Telegraph Company* v *Steven W. Hamm*, No 23488, Supreme Court of South Carolina, 409 SE 2d 775 (SC 1991), in which the court argues that the service 'is designed to protect the utility subscribers from abusive or unlawful telephone calls'. Constitutional issues have been raised by the Commonwealth Court of Pennsylvania: see *Barasch* v *Public Utility Commission*, 133 Pa Commonwealth Ct 285, 576 A 2d 79 (1990), and Keith Bradsher, 'Services identifying caller held illegal in Pennsylvania', *New York Times*, 31 May 1990. However, an appeal has been granted in this case: 584 A 2d 321 (1990). Outside the courts, an administrative law judge has advised the California Public Utilities Commission that caller-ID would be 'an unwarranted intrusion into the privacy of telephone customers': Martha Groves, 'Judge opposes plan to provide phone caller ID', *Los Angeles Times*, 22 January 1992, p A13.

Social issues raised by new telecommunication services might well force the industry to articulate a social vision of the future of communications – one that has a clear set of socially desirable goals. The USA is alive with competing corporate visions of the future of technological change. But the industry and public sector lack any compelling and attractive social vision. What are the social ends that all this technology is to achieve? AT&T, prior to divestiture, had a vision of its role as a public utility. Since divestiture it seems that Americans only agree on the rules of the game (ie competition) and hope that marketplace forces will somehow lead the industry in ways that achieve the greatest good for the greatest number. But in some areas of legitimate social concern these rules of the game fail to offer appropriate guidance.

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[51] A. Michael Noll and James P. Woods, Jr, 'The use of Picturephone service in a hospital', *Telecommunications Policy*, Vol 3, No 1, March 1979, pp 29–36.